BROUWER
Serial No. 09/680,265

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Art Unit: 2664

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Cancelled)

2. (Cancelled)

3. (Cancelled)

4. (Cancelled)

5. (Currently Amended) A base station node of a radio access network which determines a number of connections for each of plural spreading factors that can be added to the base station node, and which sends to a radio network controller (RNC) node a capacity indication including a capacity value based on the determined number of connections, wherein the capacity indication is a total capacity value calculated using a vacancy capacity value for each of plural spreading factors, ~~The apparatus of claim 4,~~ wherein the capacity indication is determined at least in part using the following expression :

$$F = \sum_{sf}^{all\ SF} W_{sf} \bullet A_{sf} \bullet C_{sf}$$

wherein:

F = free resources;

W_{sf} = a weighting factor for spreading factor sf;

A_{sf} = number of connections that can be added with spreading factor sf;

C_{sf} = consumption for spreading factor sf according to a reported consumption law.

6. (Currently Amended) A base station node of a radio access network which determines a number of connections for each of plural spreading factors that can be added to the base station node, and which sends to a radio network controller (RNC) node a capacity indication including a capacity value based on the determined number of connections, wherein the capacity indication is a total capacity value calculated using a vacancy capacity value for each of plural spreading factors, ~~The apparatus of claim 4,~~ wherein the capacity indication is determined at least in part using the following expression:

$$F = \sum_{sf}^{all\ sf} \frac{N_{sf}}{N} \bullet A_{sf} \bullet C_{sf}$$

wherein:

F = free resources;

N_{sf} = a number of allocations in the base station node with spreading factor sf;

N = a total number of allocations in the base station node;

~~W_{sf} = a weighting factor for spreading factor sf;~~

A_{sf} = number of connections that can be added with spreading factor sf;

C_{sf} = consumption for the spreading factor sf according to a reported consumption law.

7. (Currently Amended) A base station node of a radio access network which determines a number of connections for each of plural spreading factors that can be added to the base station node, and which sends to a radio network controller (RNC) node a capacity indication including a capacity value based on the determined number of connections, wherein the capacity indication is a total capacity value calculated using a vacancy capacity value for each of plural spreading factors, ~~The apparatus of claim 4,~~ wherein the capacity indication Cap_{new} is determined using the following expression:

$$Cap_{new} = L + F \text{ [[.]]}$$

wherein:

F = free resources;

L = current load of the base station node.

8. (Currently Amended) The apparatus of claim ~~2 or 4~~5, 6, 7, or 12, wherein the base station tracks usage of base station resources for determining the number of connections that can be added to the base station node.

9. (Currently Amended) The apparatus of claim 5, 6, 7, or 12~~2 or 4~~, wherein the capacity indication reports the determined number for a particular spreading factor utilized at the base station node.

10. (Currently Amended) The apparatus of claim 5, 6, 7, or 12~~2 or 4~~, wherein the capacity indication reports the determined number separately for uplink transmissions and downlink transmissions relative to the base station node.

11. (Cancelled).

12. (Currently Amended) A base station node of a radio access network which determines a number of connections for each of plural spreading factors that can be added to the base station node, and which sends to a radio network controller (RNC) node a capacity indication including a capacity value based on the determined number of connections, wherein the capacity indication includes a vacancy capacity value for each of plural spreading factors, wherein the capacity indication reports the determined number based on a combination of free connections for each of plural spreading factors, and using consumption laws appropriate for each of the spreading factors, and ~~The apparatus of claim 11,~~ wherein the combination is a weighted combination.

13. (Currently Amended) The apparatus of claim 5, 6, 7, or 12~~2 or 4~~, wherein the capacity indication is included in one of the following:

a 3GPP "Resource Status Indication" message;

a message which is distinct from a 3GPP "Resource Status Indication" message; and

its own dedicated message.

14. (Cancelled)

15. (Cancelled)

16. (Currently Amended) The apparatus of claim 5, 6, 7, or 12~~2 or 4~~, wherein the base station node has plural devices, and wherein the capacity determination is based on a number of free resources per device.

17. (Cancelled)

18. (Cancelled)

19. (Cancelled)

20. (Cancelled)

21. (Currently Amended) A method of operating a radio access network, the method comprising:

determining, for each of plural spreading factors, a number of connections that can be added to a base station node; and

sending a capacity indication to a radio network controller (RNC) node, the capacity indication including a capacity value which is based on the determined number of connections;

including in the capacity indication a total capacity value calculated using a vacancy capacity value for each of plural spreading factors, ~~The method of claim 20,~~

wherein the capacity value is determined at least in part using the following expression:

$$F = \sum_{sf}^{all\ SF} W_{sf} \bullet A_{sf} \bullet C_{sf}$$

wherein:

F = free resources;

W_{sf} = a weighting factor for spreading factor sf;

A_{sf} = number of connections that can be added with spreading factor sf;

C_{sf} = consumption for spreading factor sf according to a reported consumption law.

22. (Currently Amended) A method of operating a radio access network, the method comprising:

determining, for each of plural spreading factors, a number of connections that can be added to a base station node; and

sending a capacity indication to a radio network controller (RNC) node, the capacity indication including a capacity value which is based on the determined number of connections;

including in the capacity indication a total capacity value calculated using a vacancy capacity value for each of plural spreading factors,

~~The method of claim 20,~~ wherein the capacity value is determined at least in part using the following expression:

$$F = \sum_{sf}^{all\ SF} \frac{N_{sf}}{N} \bullet A_{sf} \bullet C_{sf}$$

wherein:

F = free resources;

N_{sf} = a number of allocations in the base station node with spreading factor sf;

N = a total number of allocations in the base station node;

~~W_{sf} = a weighting factor for spreading factor sf;~~

A_{sf} = number of connections that can be added with spreading factor sf;

C_{sf} = consumption for the spreading factor sf according to a reported consumption law.

23. (Currently Amended) A method of operating a radio access network, the method comprising:

determining, for each of plural spreading factors, a number of connections that can be added to a base station node; and

sending a capacity indication to a radio network controller (RNC) node, the capacity indication including a capacity value which is based on the determined number of connections;

including in the capacity indication a total capacity value calculated using a vacancy capacity value for each of plural spreading factors, ~~The method of claim 20,~~ wherein the capacity value Cap_{new} is determined using the following expression:

$$Cap_{new} = L + F \quad [[.]]$$

wherein:

F = free resources;

L = current load of the base station node.

24. (Currently Amended) The method of claim ~~18 or 20~~21, 22, 23, and 28, further comprising tracking at the base station tracks usage of base station resources for determining the number of connections that can be added to the base station node.

25. (Currently Amended) The method of claim 21, 22, 23, and 28~~18 or 20~~, wherein the capacity indication reports the determined number for a particular spreading factor utilized at the base station node.

26. (Currently Amended) The method of claim 21, 22, 23, and 28~~18 or 20~~, wherein the capacity indication reports the determined number separately for uplink transmissions and downlink transmissions relative to the base station node.

27. (Cancelled)

28. (Currently Amended) A method of operating a radio access network, the method comprising:

determining, for each of plural spreading factors, a number of connections that can be added to a base station node; and

sending a capacity indication to a radio network controller (RNC) node, the capacity indication including a capacity value which is based on the determined number of connections;

including in the capacity indication as the capacity value a vacancy capacity value for each of plural spreading factors, ~~The method of claim 27,~~

wherein the capacity indication reports the determined number based on a combination of free connections for each of plural spreading factors, and using consumption laws appropriate for each of the spreading factors; and

wherein the combination is a weighted combination.

29. (Currently Amended) The method of claim 21, 22, 23, and 28~~18 or 20~~, further comprising including the capacity indication in one of the following:

a 3GPP "Resource Status Indication" message;

a message which is distinct from a 3GPP "Resource Status Indication" message; and

its own dedicated message.

30. (Cancelled)

31. (Cancelled)

32. (Currently Amended) The method of claim 21, 22, 23, and 28~~18 or 20~~, wherein the base station node has plural devices, and wherein the capacity determination is based on a number of free resources per device.

33. (Cancelled)

34. (Cancelled)

35. (Cancelled)

36. (Cancelled)

37. (Currently Amended) A radio access network for comprising:

a radio network controller (RNC) node;

a base station node connected to the radio network controller (RNC) node, the base station node determining a number of connections for each of plural spreading

factors that can be added to the base station node, and which sends to a radio network controller (RNC) node a capacity indication including a capacity value based on the determined number of connections, wherein the capacity value included in the capacity indication is a total capacity value calculated using a vacancy capacity value for each of plural spreading factors, ~~The apparatus of claim 36,~~

wherein the capacity value is determined at least in part using the following expression:

$$F = \sum_{sf}^{all\ SF} W_{sf} \bullet A_{sf} \bullet C_{sf}$$

wherein:

F = free resources;

W_{sf} = a weighting factor for spreading factor sf;

A_{sf} = number of connections that can be added with spreading factor sf;

C_{sf} = consumption for spreading factor sf according to a reported consumption law.

38. (Currently Amended) A radio access network for comprising:

a radio network controller (RNC) node;

a base station node connected to the radio network controller (RNC) node, the base station node determining a number of connections for each of plural spreading factors that can be added to the base station node, and which sends to a radio network controller (RNC) node a capacity indication including a capacity value based on the determined number of connections, wherein the capacity value included in the capacity indication is a total capacity value calculated using a vacancy capacity value for each of plural spreading factors, ~~The apparatus of claim 36,~~ wherein the capacity value is determined at least in part using the following expression:

$$F = \sum_{sf}^{all\ SF} \frac{N_{sf}}{N} \bullet A_{sf} \bullet C_{sf}$$

wherein:

F = free resources;

N_{sf} = a number of allocations in the base station node with spreading factor sf;

N = a total number of allocations in the base station node;

~~W_{sf} = a weighting factor for spreading factor sf;~~

A_{sf} = number of connections that can be added with spreading factor sf;

C_{sf} = consumption for the spreading factor sf according to a reported consumption law.

39. (Currently Amended) A radio access network for comprising:

a radio network controller (RNC) node;

a base station node connected to the radio network controller (RNC) node, the base station node determining a number of connections for each of plural spreading factors that can be added to the base station node, and which sends to a radio network controller (RNC) node a capacity indication including a capacity value based on the determined number of connections, wherein the capacity value included in the capacity indication is a total capacity value calculated using a vacancy capacity value for each of plural spreading factors, ~~The apparatus of claim 36,~~ wherein the capacity value Cap_{new} is determined using the following expression:

$$Cap_{new} = L + F \quad [[.]]$$

wherein:

F = free resources;

L = current load of the base station node.

40. (Cancelled)

41. (Cancelled)

42. (Cancelled)

43. (Cancelled)

44. (Currently Amended) A radio access network for comprising:

a radio network controller (RNC) node;

a base station node connected to the radio network controller (RNC) node, the base station node determining a number of connections for each of plural spreading factors that can be added to the base station node, and which sends to a radio network controller (RNC) node a capacity indication including a capacity value based on the determined number of connections, wherein the capacity value included in the capacity indication includes a vacancy capacity value for each of plural spreading factors;

wherein the capacity indication reports the determined number based on a combination of free connections for each of plural spreading factors, and using consumption laws appropriate for each of the spreading factors; and

~~The apparatus of claim 43,~~ wherein the combination is a weighted combination.

45. (Cancelled)

46. (Cancelled)

47. (Cancelled)

48. (Cancelled)